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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Intellectual Property Dept./Dewitt Ross & Stevens
Wisconsin Alumni Research Foundation
2 East Mifflin Street,
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Madison, WI 53703-2865

EXAMINER

MAYEKAR, KISHOR

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

09/23/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/526,798

Applicant(s)

DENES ET AL.

Examiner

Kishor Mayekar

Art Unit

1795

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-20 is/are rejected.
- 7) ☒ Claim(s) 12 and 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date 3/05, 1/06 & 8/07
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: the claim priority is not included in page 1 of the specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2, 5, 8, 14 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 2, the phrase "to generate plasma" is confusing as to its correlation to the identical phrase recited in claim 1.

In claim 5, the recitation "the gas bubbles contain the dielectric liquid" is confusing as to its meaning when claim 1 recites the dielectric liquid having gas bubbles therein.

In claim 8, the recitation "the pressure" lacks antecedent basis.

In claim 14, the same is applied to claim 5.

In claim 17, the same is applied to claim 8.

Claim Rejections - 35 USC § 102 and § 103

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-7 and 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 99/47230, a reference cited by Applicant. WO '230's invention is directed to a method of treating liquid by an electrical discharge. WO '230 discloses in page 3, lines 27-32 that the liquid to be treated includes oil (a dielectric liquid). WO '230 discloses that the treatment method comprises the step of situating the liquid having gas bubbles therein to an pulse electrical discharge which generates plasma within the gas bubbles, where the pulse electrical discharge is established by the application of a high voltage electric pulses (electric field) to spaced electrodes (Figs. 2 and 5; page 19, lines 8-16; and page 2, lines 11-19). WO '230 also discloses in page 12 the voltage and the frequency applied to spaced electrodes.

As to the subject matter of claim 5 or 14, the gas is in a gaseous state (vapor form).

As to the subject matter of claim 7 or 16, since WO '230 discloses in page 15, lines 27-32 that the liquid being treated may be heated, WO '230's teachings inherently possess the further step.

7. Claims 8, 11, 17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO '230.

As to the subject matter of claims 8 and 17, WO '230 as applied above further discloses the feeding of bubbles of gas into the liquid. Although WO '230 does not disclose the recited further step of reducing the pressure of the liquid, however since the feeding is by the use of a compressor, it appears that the pressure of the liquid in the vessel is reduced compared to that of the gas.

As to the subject matter of claims 11 and 20, since WO '230's method is directed to the treatment of liquid by the electrical discharge, the selection of any liquids to be treated would have been within the level of ordinary skill in the art. And if the liquid being treated is for use in an internal combustion engine, it would have the recited further step.

8. Claims 9, 10, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO '230 in view of Jackson (US 2003/0146310 A1). WO '230 as applied above discloses in page 15, lines 27-32 that the treatment may be combined with other treatment. The difference between WO '230 and the instant claims is the recited step of

ultrasonically exciting the dielectric liquid. Jackson teaches in a method of treating a fluid by an electrical discharge the limitation (paragraph 19). The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified WO '230's teachings as shown by Jackson because this would result in forming an environment for efficiency treatment of the liquid.

9. Claims 1-3, 5-10 and 13-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Jackson '310. See paragraph 54.

As to the subject matter of claim 8 or 17, since the bubbles formed by high pressure cavitations, the pressure of the fluid is inherently reduced when compared that of the bubbles.

Allowable Subject Matter

10. Claims 12 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: Because the prior art references do not disclose in a plasma treatment method

the recited limitations a. and b. as claimed in claims 12 and 21 in combination with the other recited step(s) as claimed in independent claim 1 or 13, respectively.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kishor Mayekar whose telephone number is (571) 272-1339. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kishor Mayekar/
Primary Examiner, Art Unit 1795